

## **Background of the Invention**

**This invention relates to a portable framework designed to facilitate filling a flexible bag, sack or sandbag. A typical use could be for filling sandbags for flood control or protection from blast or ordnance where speed of manual filling could be of importance.**

**Currently, sandbags are usually filled by hand with one person holding the neck of the bag open while another person fills the bag with sand or other material using a spade or shovel. Due to the shape of the normal sandbag with a small cross section area relative to the length of the bag, it is difficult to fill the sandbag fast without considerable spillage. Various methods have been tried to improve the filling rate of the sandbags such as inverted cut-off traffic cones and simple funnels inserted into the top of the bags, but most of these systems still involve a team of two people to fill one sandbag**

**This invention provides for a framework to hold a bag, sack or sandbag to allow a single operator to manually fill sandbags, or other flexible containers, in less time than a team of two operators working without the benefit of this invention. The structure enables simple regulation of the content of the bag to facilitate tying and to ensure the correct degree of fill for subsequent use. For example sandbags for use in building flood defenses are required to be at most 2/3 full.**

**Transport or hand carrying of the framework is important in many flood situations. The invention provides a strong, light structure that is stable in use and can be readily dismantled and reassembled into a smaller format to enhance transport and storage. At the same time the framework includes a structural element that enables simple carrying of the whole.**

### **Introduction to the Drawings**

- Figure 1** shows a perspective view of the complete bag holder without a bag installed.
- Figure 2** shows a 'rear' view of the framework assembled ready to receive a bag
- Figure 3** shows a side view of the framework assembled ready to receive a bag
- Figure 4** shows a side view of the framework ready to receive a bag and with the funnel in the raised position. Providing convenient access to the hooks
- Figure 5** shows the 'rear' view of the framework reassembled ready for packing and transport
- Figure 6** shows a side view of the framework reassembled ready for packing and transport
- Figure 7** shows details of the pivot connection between the funnel and framework
- Figure 8** shows details of the pivot connection between the framework and the swinging arms

### **A Preferred Embodiment**

Referring to the drawings, **Figure 1** shows the complete bag holder framework.

The (in this case) tubular frame includes a rigid main framework (1) which includes a loop or bend (20) within this framework which supports the two fixed bag holding hooks (15) and the pivoting or hinging brackets (11) into which slides the pivoting tube (10) providing a hinged joint between the rigid main framework and the funnel (3). The distance between the removable foot extensions (4) fitted into the locking mechanism (17) and the hooks (15) sets the height at which the bag (24) will be supported. A pair of swinging arms (2), bent from one piece of tubing, is connected with a base bracket (5) at either side. Each bracket (5) engages with a pivot pin (6) to provide a hinged connection with the rigid main framework. A hook (14) near the end of each arm aligns with the fixed hooks (15) mounted on the rigid main framework (1) such that the four hooks (14 & 15) can be engaged with the open top of a bag, sack or sandbag as will be described under Figs. 3 & 4. The two swinging arms (2) are pulled away from the rigid main framework (1) so that anything connected between the fixed bag holding hooks (15) and the swinging arm bag holding hooks (14) is kept under tension by the action of springs (7) or similar means to pull the swinging arms (2) away from the rigid main framework (1). A conical funnel, (3) with an included angle of  $80^{\circ}$  is mounted on the rigid main framework (1) by the brackets (9), pivot tube (8) and pivot pin (10) and hinging bracket (11), more clearly shown in Fig. 7. With the funnel folded down, the funnel (3) and the bag hooks (14 & 15) are located such that the bottom tapered exit of the funnel will discharge any material fed into the funnel into the open top of any bag, sack or sandbag (24) held by the bag hooks (14 & 15). The funnel is so mounted that it may be swung away from its operating position above the bag hooks to facilitate the installation and removal of any bag, sack or sandbag attached to the bag hooks.

**Figure 2** shows a 'rear' view of the bag holder assembled ready for use. Sleeves (18) are mounted on each of the swinging arms (2) to secure the removable foot extensions (4) shown in Fig. 1, for storage and transport. Similarly Mounting brackets (16) are provided on a cross member (19) in the rigid main framework to secure the funnel for storage transport.

**Figure 3** shows a side view of the bag holder where the conical funnel (3) is positioned over the hooks (14 & 15) such that anything fed into the funnel will fall into the sandbag supported on the hooks. The bag hooks (14 & 15) are so positioned relative to the height of the bag, sack or sandbag to be used, that a proportion of the bag, sack or sandbag rests at the level of the bottom of the base (1) so that after the bag is filled to the top and disengaged from the bag hooks it is possible to manually lift the filled bag, sack or sandbag to allow the contents to drop into the unfilled bottom part of the bag to permit the now unfilled top portion of the bag, sack or sandbag to be gathered and tied or otherwise secured to prevent spillage of the contents. An object – such as a filled sandbag -may be placed between the support legs of the framework to decrease the volume of filling taken by the bag as required by the targeted use to which the filled bag will be applied. Bags for use in constructing flood control structures should be only 2/3 full, while bags for blast diversion can be fuller. The swinging arms (2) are pulled away from the rigid main framework (1) by the action of the springs (7) but restrained by stops (21) as shown in Figs. 6 & 8 incorporated in the swinging arm brackets (5) acting on the cross member (19) via brackets (22) and pivot pins (6) as shown in Figs. 2 & 8, so that the swinging arm bag hooks are at a convenient position for an operator to engage one side of the top opening of a bag, sack or sandbag onto the hooks before forcing the opposite side of the bag against the pressure of the spring to engage onto the fixed bag hooks mounted on

the rigid main framework thus securing the bag, sack or sandbag ready for filling through the funnel once the funnel has been lowered into the filling position as shown in Figure 3.

Figure 4 shows a side view with the funnel (3) in the raised position to allow easy attachment or removal of the sandbag to or from the hooks (14 & 15). When the funnel is lowered for filling, the stop (12) engages with a cross bar (13) shown Figures 1 & 7, to retain the funnel in the optimum position for directing the filling material into the receptacle.

Figures 5 & 6 show the bag holder reassembled ready for transport and packing. The bend portion (20) of the rigid main framework provides a handle for ready carrying of the framework when reassembled for transport.

The removable foot extensions (4) are inserted into the sleeves (18) on the swinging arms (2) and secured by locking mechanism (17) as shown in Figs. 1 & 8. The pivot pin (10) is replaced into the funnel brackets pivot tube (8) engaged with the mounting brackets 16 positioned on the cross member (19) to locate the funnel and to restrain the swinging arms (2) against the force of the springs (7).

Figure 7 shows the details of the funnel (3) connection to the rigid main framework (1) where a pivot pin (10) connects the two brackets (11) mounted on the loop section (20) of the rigid main framework (1) through the pivot tube (8) that is an integral part of the funnel (3) by way of the brackets (9) such that the pivot tube (8) may pivot about the pivot pin (10) to allow the funnel to be moved, typically raised, relative to the rigid main framework to allow access for attachment and removal of the sandbags to & from the hooks.

A stop (12) fixed to the pivot tube (8) acts on a cross bar (13) such that the funnel (3) can only be lowered to a determined position suitable for directing material through the funnel into the receptacle supported on the hooks. The position of the stop (12) between the brackets (9) and behind the main framework (1) and the cross bar (13) ensures that articles such as fingers or items of clothing, are unlikely to get trapped as the funnel (3) is lowered.

Figure 8 shows details of the connection between the swinging arm bracket (5) and the rigid main framework (1) where the bracket (5) is allowed to pivot about a pivot pin (6) that is acting on a bracket (22) connected to a cross member (19) of the rigid main framework (1) such that a spring (7) in tension and connected between the rigid main framework (1) and the swinging arm bracket (5) forces the swinging arm bracket to rotate about the pivot pin (6) until the stop (21) incorporated into the bracket (5) comes into contact with the cross member (19) to allow the swinging arms to reach a pre-determined position relative to the rigid main framework.

The position of the spring (7) within the main framework (1) and the location of the stop (21) to engage with the underside of the cross member (19), at the bottom of the main framework when in use, substantially reduces the chances of articles such as fingers or items of clothing will be trapped or damaged as the swinging arm mechanism is employed.